

MISSOURI. Conservationist

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Conservation Vision

Missourians have a long history of being visionary in conserving our state's natural resources and have shown they are willing to take action for a better quality of life.

Missouri is the only state in the nation that has created sources of dedicated funds to protect and conserve natural resources, cleaner water, better soil stewardship and to set aside natural areas for recreation. No other state in the nation has been that progressive in those three areas.

As the Department celebrates its 75th anniversary, we are taking time to pause and reflect. All Missourians should be proud

of our collective conservation history over the past 75 years, from the direst of times to today's reality of abundant wildlife populations, including deer, turkey and waterfowl. Restoring healthy forests and providing a diversity of habitat for many important Missouri species has helped early conservation visions become hugely successful.

In 1936, men of great vision established a modern-day citizen-led, apolitical, science-based conservation department. That initiative petition in 1936 was the first successful initiative petition in the state's history passed by a wide margin of victory. In 1976, Missouri men and women were successful through another initiative petition and created a vision for their future by passing the conservation sales tax. We must continue to carry forth their vision and build our own to continue to improve Missouri's natural resources and our quality of life.

The challenges of today and tomorrow are many. We must find ways to blend domestic energy development with quality natural resource management. Wind power and many other energy initiatives all have the potential to affect our fish and wildlife populations. Water will continue to be an increasingly scarce and sought-after resource. Missouri's population continues to grow and place extraordinary demands on our soil and water resources. Wildlife diseases, invasive species, rare



and abundant wildlife are just a few of the challenges that will require us to work together to find solutions. To meet these challenges Missourians will have to continue their tradition of conservation vision, looking for opportunities to find balance and discerning when to take a firm stand for our state's natural resources.

The Department is committed to Missouri's long-term conserva-

tion vision by working side by side with citizens to:

- Ensure healthy and sustainable forest, fish and wildlife resources.
- Manage lands held in public trust to benefit all citizens and natural resources.
- Ensure sound financial accountability and transparency in all MDC operations.
- Provide opportunities for both urban and rural citizens to be actively involved in conservation education and services.
- Engage partners at all levels to enhance natural resources and effective delivery of conservation services.

We've achieved the dreams of 1936 and 1976. Now it's time to create our vision and dream for the future. The work of conservation is not done. Dream big—if we collectively use our Missouri ingenuity, our willingness to take action and our commitment to conservation, we can continue this uniquely Missouri vision that many others in America and around the world look to for conservation leadership. After all, we are the Show-Me State!

Tim Ripperger, deputy director



FEATURES

10 **The Promise Continues**

by Brett Dufur

The Conservation Department was created by a citizen-led effort to restore and conserve Missouri's forests, fish and wildlife 75 years ago. This article, the last in a 12-part series celebrating the anniversary, focuses on the future of conservation.

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by Jason Sumners

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Seven photos were selected out of 13,000 in this contest to celebrate Missourians' love of nature and their ongoing role in supporting conservation.

Cover: Best of Show from the 75th anniversary photo contest of Centaur Chute on Howell Island Conservation Area, by Ryan Campbell.

📷 10–20mm lens • f/16 • 1/2 sec • ISO 200

Above: Roubidoux Creek Conservation Area is one of more than 900 areas managed by the Department, by David Stonner.

📷 70–200mm lens • f/4.5

1/125 sec • ISO 200

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THE BRIGHTSIDE

What a surprise when I opened the September issue to the article about Operation Brightside in St. Louis! [Page 22] Years ago, I was lucky enough to volunteer with Mary Lou and Gwen. They were just the best. Congratulations to all of the volunteers on a job well done on such an eyesore of a corner!

Janet Smith, Affton

BEAGLES WANT TO KNOW

I am really enjoying the *Conservationist's* online archives that were announced in the June issue [Visit the Missouri Digital Heritage Database at go.usa.gov/VTW or the *Conservationist's* page at mdc.mo.gov/node/83]. I have two beagles with whom I enjoy rabbit hunting in the fall and winter. So, my first search was for articles about beagles, which resulted in many articles about rabbit hunting. It has been very interesting reading. Several of the articles refer to methods

MDC used to monitor the rabbit population. Although rabbits appear to be numerous today, the archives suggest there had been concern about their diminishing numbers. I had no idea the Conservation Department kept track of a "rabbit index." Does the Department still track the rabbit index year to year, and if so, are the annual indices published anywhere or otherwise made available to the public? I often see reports on deer, turkey, quail and waterfowl populations discussed in the *Conservationist*, but I do not recall recently reading about how rabbits or other small game are fairing in Missouri. My beagles are interested in comparing their hunting success to the rabbit index. Sigmund and Lucy (the beagles) thank you for your answer.

Dr. Christopher Grimes, Dardenne Prairie

Biologist's Note: Dear Sigmund, Lucy, and Dr. Grimes: I'm glad you are enjoying the archived articles. I've

enjoyed looking through them myself. Throughout the years, the Department has used a variety of techniques for different animals. Most recently, for cottontails, our conservation agents ran roadside surveys in April from 1983–2002 along the same 20-mile routes as our quail roadside surveys (run in August). The rabbit survey routes were discontinued because it was determined that the information we were getting from the surveys was so variable (as are rabbit populations) that they were not useful.

The Department still conducts the Small Game Harvest Survey to track many small game species. This mail questionnaire asks permit holders if they hunted small game, how many of each of the small game species they harvested, where they hunted most and how many days they hunted for each species. The results from the most recent survey can be found at this link: mdc.mo.gov/node/4207.

INSPIRING VIEWS

I look forward to each issue of the *Missouri Conservationist*. It is helpful when I am looking for a place to camp or visit for the day in Missouri. Most of all, I enjoy the photographic art of Noppadol Paothong. I believe that his art is inspirational, and I enjoy putting some of it out where I can see it daily. Thank you for the beauty you display in your magazine.

Carol Grimmer, Bridgeton

The picture on the back cover of the September issue could not be cuter—seriously! That black bear cub is beyond adorable. Please send kudos to David Stonner.

Susan Daiber, via Internet

Regarding David Stonner's cover photo on the September issue [Cooper Hill Conservation Area in Osage County], the photo's flowing movement, from lower left to upper right, and accented by the sunburst, is commendable.

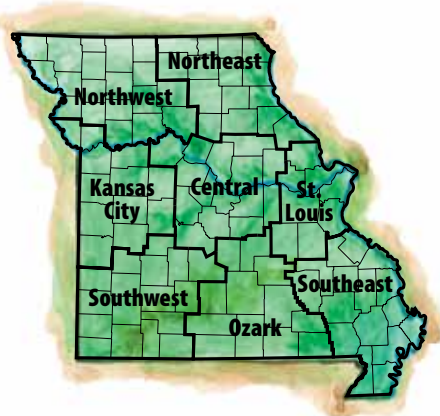
Walt Jones, Lake St. Louis



Reader Photo

LEUCISTIC FOX SQUIRREL

Duane Widhalm of Lebanon captured this image of a squirrel at his parents' farm near Brunswick. The coloration of fox squirrels can vary significantly. Partial albinos like this one are referred to as leucistic individuals. Widhalm grew up at the farm and took this photo while deer hunting on the property with several of his brothers. "This squirrel was mother to two baby squirrels, which had very similar markings as the mother had on her," says Widhalm. Genetics determine the color variations on the fur, meaning that some offspring may also have patterns of white fur.



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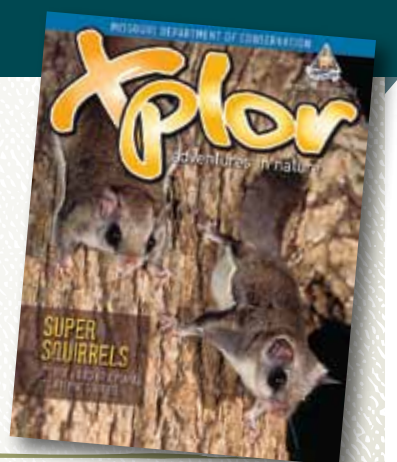
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Drought Tough on Nature

Everything from trees to fish felt the pinch of heat and drought this summer. The period from January through June was the hottest on record nationally, and 100-degree-plus temperatures lasted from June to August.

Many trees dropped their leaves and fruits early, cutting into acorn production. Some, particularly those in crowded stands, will die. The drought underscores the importance of proper forest management and working with a professional forester to promote healthy forests. Timber harvests could salvage some of the dead

trees and improve survival of those remaining. For help making such decisions, find an MDC forester by visiting mdc.mo.gov and selecting "Who's My Local Contact."

The drought also sparked wildfires. Missouri normally sends crews to help fight fires in the western United States, but this year most of MDC's firefighting force stayed home, responding to calls from local fire departments. MDC has mutual aid agreements with more than 800 fire departments and has assigned approximately \$70 million in federal excess property equipment to

these partners for wildfire suppression. It awards an average of \$400,000 in cost-share grants annually to fire departments to purchase equipment.

Native wildlife is adapted to Missouri's changeable weather, but animals must change their behavior under extreme conditions. Deer, bears and other wildlife stay closer to shrinking water sources. Artificial water sources like bird-baths and swimming pools, as well as watered gardens and lawns, attracted wildlife, increasing nuisance-wildlife complaints. Deer, turkeys and other highly mobile wildlife travel farther than usual and move at times of day when they ordinarily would be inactive. Smaller, less mobile animals, such as frogs, take the opposite approach, hunkering down to wait out the heat.

The southern migration of hummingbirds began early, and biologists urge Missourians to leave nectar feeders out well into the fall to help late migrants. The drought likely will reduce the availability of seeds and insects that birds rely on for food, so backyard feeders are likely to be especially well-attended this winter.

Waterfowl hunters have been encouraged by news that near-record numbers of ducks will head south from nesting grounds in the northern United States and Canada this year. However, reduced availability of agricultural crops and natural food plants on wetland areas could prevent ducks from lingering in Missouri. Flooding wetland areas will be a challenge if the drought continues. Conservation areas most susceptible to drought include Bob Brown, Nodaway Valley, Fountain Grove and Otter Slough.

This year's weather won't have an immediate effect on deer and turkey numbers. A mild winter and early spring allowed the deer and turkeys to enter the summer in excellent condition. Deer antler growth won't be affected, and the second year in a row without an unusually wet spring is likely to help with survival of young turkeys.

However, epizootic hemorrhagic disease and blue tongue always are concerns in drought years. Deer have more opportunity to contract the diseases when they are crowded around limited water supplies. This likely is one reason for an increase in the number of reported cases of epizootic hemorrhagic disease this year. MDC is monitoring these reports to determine the

severity and location of outbreaks. Hemorrhagic diseases are different and unrelated to chronic wasting disease.

Warm, dry weather early in the nesting season gave quail, pheasant and other upland wildlife a much needed break from the wet, cold weather that has plagued them in recent years, raising hopes for those species' future.

Livestock forage was critically scarce this summer, and MDC supported a request by the U.S. Department of Agriculture's Farm Services Agency to allow farmers to graze cattle on some land enrolled in the Conservation Reserve Program and permit haying on land enrolled in the Wetland Reserve Program. MDC also provides cost share to landowners who establish native warm-season grasses that provide forage when fescue and other cool-season forage go dormant.

Hot, dry weather increased summer fish kills. Warm water holds less oxygen than cool water, and hot weather increases the growth of algae. Cloudy weather turns algae from oxygen producers into oxygen consumers, so a couple of overcast days can have disastrous results for fish. An example was the early-August die-off of 20,000 fish at St. Joseph's Lake Contrary.

Anglers and boaters found the water level in some streams so low that boat ramps were unusable. Until streams return to more normal levels, it's wise to inspect the bottom ends of boat ramps before launching to ensure the concrete apron extends far enough to support your trailer.

The flow from springs that feed four of MDC's five cold-water fish hatcheries was down by as much as half, forcing hatchery workers to transfer part of their fish to Shepherd of the Hills

Hatchery. It has an abundant supply of cool water from Table Rock Lake.

Good news related to the drought was scarce, but there were a few silver linings. Ticks and mosquitoes were less troublesome. The die-off at Lake Contrary killed invasive Asian carp. Zebra mussels can't tolerate warm water and likely were set back in some of the Missouri waters they have invaded. Low water allowed maintenance work that normally would be difficult at boat ramps and wetland areas.

While individual animals and local populations may suffer, MDC experts agree that forests, fish and wildlife overall will bounce back from the current drought and heat.

"The resiliency of wild animals and the stability of natural systems is truly remarkable," says one biologist. "Trees and animals don't fret over the present or the future. They just persevere."



ASK THE OMBUDSMAN

Q: On a recent rainy night, I observed a large number of salamanders crossing a rural highway. Can you explain their behavior?

A: Like other amphibians, many salamanders are dependent on water for the reproductive stage of their life cycle. In the Missouri Ozarks, several salamander species make massive migrations to wetlands to reproduce. For example, ringed salamanders make their way to fishless ponds for breeding, usually between September and early November. This secretive forest species spends much of the year under logs or rocks, or in burrows made by other animals. The salamanders move across country to breeding ponds, but paved roadways represent barriers to their fall migration, except during nights with heavy rain when they use swimming movements to cross the road. Hundreds of individuals can move toward a single breeding pond. Courtship, mating and egg-laying take place at the pond, with fertilized egg masses attached to submerged vegetation or the pond bottom. It's a fascinating natural drama that plays out without much notice from humans.

Q: I found an odd-looking structure on sandy soil on my property—a small, papery sphere resting on a star-shaped base. Do you know what that is?

A: It sounds like you found a type of fungus called an earthstar, which is related to puffballs. It starts out as two leathery spheres, one inside of the other. The outer sphere splits and peels back into the star-shaped base. The inner sphere, or spore sac, is where the fungal spores develop. At maturity, the spores exit through a hole in the top of the sac, like puffs of smoke, and disperse to grow into new fungi. The leathery fungal tissue eventually dries into a grayish-white, papery texture. There are several related species that occur in Missouri, differing slightly in their structure.



Ombudsman Tim Smith will respond to your questions, suggestions or complaints concerning Department of Conservation programs. Write him at PO Box 180, Jefferson City, MO 65102-0180, call him at 573-522-4115, ext. 3848, or email him at Ombudsman@mdc.mo.gov.

MDC Magazines Take Top Honors

Missouri Conservationist and Xplor magazines both scored wins in a national competition sponsored by the Association for Conservation Information (ACI).

Two articles (*The Royal Kingbirds of Kauffman Stadium* by Larry Rizzo, July 2011 *Conservationist*, and *Animal Assassins* by Matt Seek, October–

November 2011 *Xplor*) tied for first place in the competition for Best General Interest Article. *Xplor* took first place in the Best Magazine category. Only one entry was allowed per agency, so the *Conservationist* wasn't in the running.

MDC also took first place for its website and for the 2011 *Natural Events Calendar*. In all, Missouri won 19 awards—more than any other state—in

categories ranging from Best Book (*Cooking Wild in Missouri*, first place) to Big Ideas-Small Budgets (Invasive Species Alert: ZOMBIES! on MDC's Fresh Afield blog, first prize.)

ACI is a nonprofit association of information and education professionals representing state, federal and Canadian agencies and private conservation organizations.

Share Your Harvest

The Conservation Federation of Missouri once again is asking deer hunters to help feed thousands of Missourians who are having trouble making ends meet.

Share the Harvest is a citizen-led program that lets hunters donate whole deer by simply dropping them off at participating meat processors. Contributions from sponsors pay for processing most whole-deer donations.

Last year, hunters donated 6,191 deer out of the 291,592 deer taken during the firearms and archery deer seasons. That put 317,882 pounds of venison into community food pantries and charitable groups statewide.

To learn how and where to donate deer through Share the Harvest, call 573-634-2322, email mofed@socket.net, or visit mdc.mo.gov/node/2544. Participating meat processors also are listed in the 2012 *Fall Deer and Turkey Hunting Regulations and Information* booklet, which is available wherever hunting permits are sold or online at mdc.mo.gov/node/3610.

Waterfowl Seasons Coming Up

Duck-hunting prospects are bright again this year, with a liberal season and historically high duck numbers. Food and water supplies remain a concern, however.

Changes in this year's hunting regulations are few. The only change in bag limits is an increase from two to four scaup daily. Hunter preferences regarding the possible addition of a fourth zone or a split hunting season were so divided that choosing any combination of splits or zones would have displeased a majority of hunters. Consequently, Missouri will have continuous waterfowl hunting seasons in three zones again this year and through 2015. Youth waterfowl seasons will take place the weekend before the regular season in each zone. This is different than the



Black bear

Give Bears a Heads-Up

Daron Wilkins enjoys seeing wildlife, but he got a little closer to nature than he bargained for while bowhunting last year.

He was in a 20-foot ladder stand at the edge of a field in Webster County when a medium-sized black bear appeared in the field. Apparently, it smelled the deer lure Wilkins was using, and before the hunter knew it, the bear was in the tree with him.

"I had no idea how fast a bear can climb," says Wilkins. "I don't think she had any idea I was in the tree. She got to the foot part of my stand, where she couldn't go any further. Then she went around to the back side of the tree and continued coming up."

Until that moment, Wilkins had felt only excitement. Now, within an arm's length of the animal, another emotion took over. . . fear.

Wilkins made some noise, and the bear climbed back down the tree, leaving the hunter shaken but unharmed. Video of the encounter is at youtube.com/watch?v=QOKI8dhLd8w.

"That bear moved so fast, the only chance I had to stop her was when she was in the field foraging," says Wilkins. "When she smelled something, her behavior went from one thing to something completely different in a matter of seconds, and I went from 'Hey, this is cool' to 'She's in the tree with me!' If I had it to do over, I would yell at her when she was still way out in the field."

For more about black bears in Missouri, see mdc.mo.gov/node/3506.



past two years, when the youth hunt was held two weeks before the regular season opener to avoid an overlap with youth deer season.

Duck season dates are:

North Zone:

Youth season Oct. 20 and 21

Regular season Oct. 27 through Dec. 25

Middle Zone:

Youth season Oct. 27 and 28

Regular season Nov. 3 through Jan. 1

South Zone:

Youth season Nov. 17 and 18

Regular season Nov. 22 through Jan. 20

This year's season for Canada geese and brant is Oct. 6 through 14 and Nov. 22 through Jan. 31 statewide. The season for blue, snow and Ross's geese is Oct. 27 through Jan. 31 statewide. White-fronted goose season is Nov. 22 through Jan. 31 statewide. The Light Goose Conservation Order is Feb. 1 through April 30, 2013.

Full details of waterfowl hunting regulations are available in the *2012–2013 Waterfowl Hunting Digest*, available wherever hunting permits are sold or online at mdc.mo.gov/node/5646.

Resource Scientist Doreen Mengel says hunters need to know that the ongoing drought could dramatically reduce waterfowl habitat and hunting prospects in Missouri this year.

"Although duck-hunting prospects are potentially bright again this year, with a liberal season and historically high duck numbers, hunter expectations must be tempered due to conditions created by the current severe drought conditions," says Mengel. "Duck-hunting prospects will depend on the weather more this year than most. Fall rains will be needed to fill wetland basins and provide habitat for an anticipated record fall flight."

Did You Know?

Conservation makes Missouri a great place to hunt and fish.

Federal Excise Taxes Support Conservation in Missouri

» **About \$20 million per year** is received by the Missouri Department of Conservation from federal sources. Most federal aid comes from the U.S. Fish and Wildlife Service via the Wildlife Restoration and the Sport Fish Restoration programs. Funds are distributed to the states based on a formula that includes total area of each state and the number of paid license holders in each state.

» **The Wildlife Restoration Program** began in 1937 and is funded by excise taxes on firearms, ammunition and archery equipment. Funding must be used on projects to restore, conserve, manage and enhance wild birds and mammals and their habitat. Projects also include providing public use and access to wildlife resources, hunter education, and development and management of shooting ranges.

» **The Sport Fish Restoration Program** began in 1950 and is funded by excise taxes on fishing equipment and trolling motors, motorboat and small engine fuel tax, and import duties on tackle and pleasure boats. Funds must be used for the restoration, conservation, management and enhancement of sport fish, and public access development and maintenance.

Emerald Ash Borer Spreads

Forestry and agriculture officials urge increased caution by Missourians after the discovery of three new outbreaks of emerald ash borers in July.

The invasive beetle already has destroyed millions of ash trees in the northeastern United States and could wipe out ash trees in Missouri. Forestry officials have been on heightened alert since discovering an outbreak at a campground near Lake Wappapello in Wayne County in 2008.

An alert arborist spotted the signs and symptoms of an emerald ash borer infestation near Parkville in July. Around the same time, emerald ash borers also turned up in monitoring traps at two sites in Reynolds County.

MDC works with state and federal agriculture agencies to monitor Missouri's forests and urban areas for signs of the insect. These and other members of Missouri's Invasive Forest Pest Council are working to determine the extent of the new outbreaks and adjust the state's emerald ash borer control strategy accordingly.

Emerald ash borers spread mostly by hitching rides with people transporting firewood, logs, tree debris or planting stock from place to place.

Foresters encourage people to use native trees other than ash trees in landscape plantings, buy firewood near their destination when traveling and camping, and burn it all before departing. You can check trees for signs of the emerald ash borer using the online guide available at eab.missouri.edu and report concerns about trees by calling 866-716-9974.

For more information about the emerald ash borer, as well as the Missouri Department of Agriculture's other programs, visit mda.mo.gov.



Emerald ash borer

Danville Conservation Area

Explore woodlands, limestone glades and rich wildflower displays at this unique conservation area in central Missouri.



COME PREPARED TO explore Danville Conservation Area (CA) with hiking boots, cameras, picnic baskets and wildflower identification guides. This 2,655-acre area features almost 2,000 acres of well-developed forest accompanied by limestone glades and grassland fields.

While Danville CA provides prime wildflower-viewing opportunities during the summer growing season, the unique geologic formations exposed on the area are best seen in the fall through the spring.

The conservation area is also home to the 361-acre Danville Natural Area (NA), which boasts the largest limestone glades north of the Missouri River. Split into two units, Danville NA's larger eastern unit can best be viewed from the Danville Glades Trail, a 3-mile loop that leads hikers through woodlands of post, chinkapin and blackjack oak, along with intermittent open fields.

Danville CA puts rich wildflower displays at the forefront throughout the growing season. More than 300 native plant species have been documented at Danville NA alone, including characteristic limestone glade plants such as prairie dock, silky aster, glade milkweed and cylindrical blazing star. The conservation area also supports pale-purple coneflower, glade coneflower, prairie clovers and Indian paintbrush, among other native wildflower species. Wildlife-viewing opportunities are abundant. The most obvious are typically birds. Danville CA's variety of glade and woodland birds can include species such as the summer tanager, blue-gray gnatcatcher, eastern wood-peewee, prairie warbler and yellow-breasted chat.

Native grasses and legumes provide excellent habitat for wild turkeys. The area also supports elusive ruffed grouse in low numbers. In-season hunting opportunities include deer and turkey. Clear, Pinch and Dishwater creeks add a splash of water to the beauty of the landscape. Camping on the area is primitive, but two disabled-accessible privies with public restrooms are available on the eastern and western ends. Campers should bring water and come prepared to pack out waste. MDC has used management techniques such as tree thinning and prescribed fire to restore the glades and woodlands on Danville NA. Cedar removal and prescribed fires are frequently used across the conservation area to maintain these natural communities.

Danville CA is located in Montgomery County and can be easily reached from Interstate 70. For more information including an area map and brochure, visit the Danville CA website (listed below).

—Rebecca Maples, photo by David Stonner

📷 70–200mm lens • f/2.8 • 1/250 sec • ISO 200

Recreation opportunities: Bird watching, bicycling and horseback riding on public roadways only, hiking, hunting in season, nature and wildlife viewing, outdoor photography, primitive camping with disabled-accessible privies, trapping with special-use permit

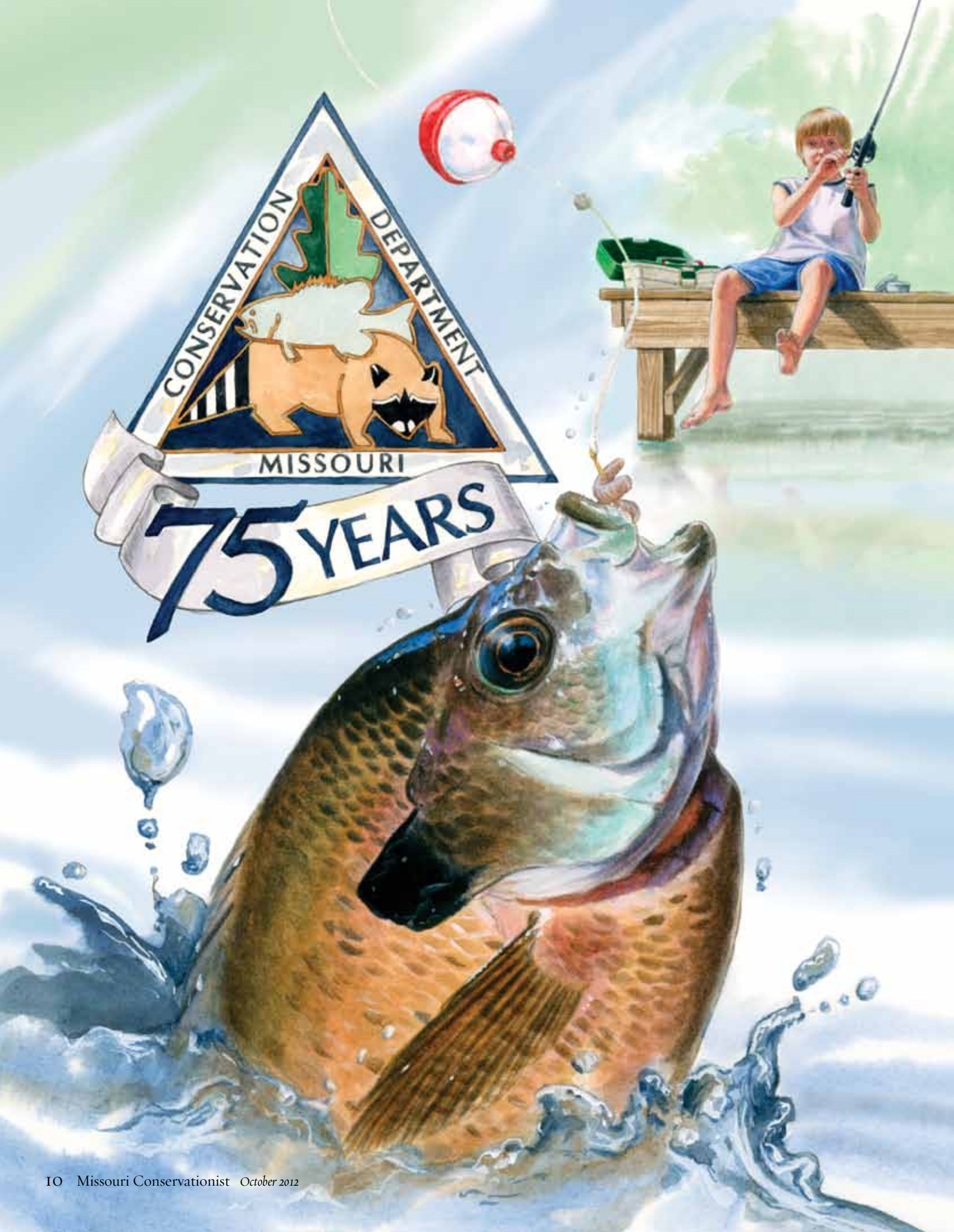
Unique features: This area features more than 300 species of native wildflowers, prime bird-watching opportunities and the largest limestone glades north of the Missouri River.

For More Information

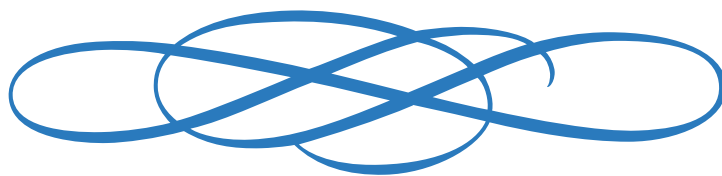
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The Promise Continues



The Conservation Department was created by a citizen-led effort to restore and conserve Missouri's forests, fish and wildlife 75 years ago. This article, the last in a 12-part series celebrating the anniversary, focuses on the future of conservation.

by BRETT DUFUR

WHAT'S PAST," WILLIAM Shakespeare famously wrote in *The Tempest*, "is prologue." Shakespeare was right—what's past is but a prelude of more important things to come. The Department's 75th anniversary is a fitting time for Missourians to reflect on more than seven decades of successful citizen-led conservation efforts. The hard work of multiple generations has brought back a number of fish and wildlife species to abundance; restored healthy forests; greatly improved access to hunting, fishing and other outdoor recreational opportunities; and created a Department that is a national leader in forest, fish and wildlife conservation.

THE SPIRIT OF CONSERVATION

Missouri citizens have taken unique and proactive steps to support and enhance conservation. What we now consider "business as usual" was quite groundbreaking in its early days. Back in 1936, Missourians rallied to create a Conservation Commission through a state constitutional amendment. This gave Missouri the nation's first apolitical, citizen-led, conservation agency with a management approach based on technical research. Then in 1976, citizens voted again to dedicate funding for the long-term work of conservation through a one-eighth of one percent sales tax, known as the *Design for Conservation*.

"These were truly visionary concepts," says MDC Director Robert L. Ziehmer. "Thankfully, these citizen-led actions created a solid foundation for conservation. We continue to reap many benefits from abundant forest, fish and wildlife resources today."

Despite the numerous conservation successes that can be credited to Missouri's unique citizen-led conservation model, many of the same challenges that faced early conservationists decades ago persist today. Citizen involvement remains vital to ensure that healthy lands and waters continue to support the complex web of life in an ever-changing environment. But the future is bright. The Show-Me State is uniquely poised to lead in a future that will be full of new opportunities and challenges.

SCIENCE-BASED CONSERVATION

Missourians will face new conservation issues and trends head-on with the Department's time-tested,



A strong conservation ethic in the next generation is key for conservation to continue to work in Missouri.

science-based approach to conservation coupled with active resource management. One common theme in forest, fish and wildlife management is "change is the only constant." Just as an unkempt field may eventually become choked with weeds, so too might a prairie ultimately grow up in saplings; a forest suffer from diminished habitat diversity; and altered waterways fail to meet the spawning and brood-rearing needs of fish and other aquatic organisms.

The Department's active resource management of the state's more than 900 conservation areas, as well as the numerous technical and cost-share programs available to private landowners, are ways for the Department to continue evolving the science of conservation in real-time, as new methods and approaches to forest, fish and wildlife management are refined.

"Future conservation success will only be as good as the information we use to make our management decisions," says Dennis Figg, MDC wildlife programs supervisor. "Good conservation is a result of both science-based information and citizen participation. As the human population grows, the Missouri landscape continues to change and the challenge of sustaining fish and wildlife is increasingly difficult. Science-based con-

THE FOUNDATION OF MISSOURI'S ECONOMY AND QUALITY OF LIFE

Conservation Pays in Missouri. Each year fish and wildlife recreation, and the forest products industry, contribute more than \$11.4 billion to Missouri's economy.

Conservation Pays its Way. Forest, fish and wildlife recreation spending generates more than \$382 million annually of state and local tax revenue. The amount of state sales tax revenue generated from fish and wildlife recreation and the forest products industry is about the same as the sales tax revenue received by MDC from the conservation sales tax. For every \$8 spent on taxable items, one penny goes to conservation. The Department's budget is less than 1 percent of the total state budget and the Department receives no state general revenue.

Conservation Pays for Jobs. Fish and wildlife recreation and the forest products industry support more than 95,000 Missouri jobs.

Conservation makes Missouri a great place to live, work, hunt, fish and enjoy the outdoors.

Conservation Makes Missouri a Great Place to Hunt, Fish and Enjoy Nature. Missouri is known for world-class outdoor adventures. More than one-quarter of tourism dollars in Missouri are spent on forest, fish and wildlife recreation. More than 600,000 people hunt in Missouri, 1.1 million fish, and 2.2 million view, feed or photograph wildlife. They spend more than \$3 billion each year in Missouri.

Conservation Preserves Missouri's Outdoor Heritage. Missouri is ranked first in the nation for hunter recruitment. For every 100 hunters that stop hunting, 116 take up hunting. Missouri is ranked fifth in the nation for the number of resident hunters and eighth in the nation for the number of resident anglers.

Learn more about the economics of conservation at bit.ly/MGe8XS.

servation continues to benefit the state's forest, fish and wildlife resources through the continued involvement of the public, landowners and our partners."

A CHANGING MISSOURI

When the Department began in 1937, the state's population was mostly rural. Now, the majority of Missourians live in cities and suburbs. As many of today's Missourians become more removed from the seasonal harvesting of food and fuel from the outdoors, conservation can take on a different meaning for them. This demographic shift presents a tremendous opportunity for Missourians to improve their local forest, fish and wildlife resources at the community level. MDC provides information, technical support, funding and recognition programs to help Missouri's communities learn about and conserve wildlife habitat, and enjoy the benefits of "green infrastructure." For more information on community conservation opportunities, visit mdc.mo.gov/node/3118. To keep Missourians connected to the outdoors, the Department provides close-to-home outdoor experiences at nature centers, conservation areas, shooting ranges, and through outdoor skill programs. For more information on MDC facilities and Discover Nature programs, visit mdc.mo.gov/node/3116.

The changing face of Missouri's rural landowners also marks a turning point for Missouri's forests, fish and wildlife. "Many of Missouri's landowners will be transferring management or ownership of their property to a younger generation in the next decade," says MDC Deputy Director Tom Draper. "A strong conservation



Shannon County landowner Ron Graef discusses timber stand improvement with Private Land Conservationist Mike Gaskins. Because 93 percent of Missouri is privately owned, ultimately the success of conservation rests on strengthening the partnership between landowners and the Department.

ethic in this younger generation of landowners is the key for conservation to continue to work in Missouri."

Because more than 90 percent of Missouri is privately owned, ultimately the success of conservation depends on the strong partnership between citizens, landowners and the Department. The Department partners with numerous state and federal agencies and conservation groups to provide technical and financial assistance to landowners interested in improving habitat on their farms. Each year the Department provides timely and responsive service to more than 70,000 urban and rural

landowners, including more than 6,000 on-the-farm visits to help landowners achieve their natural resource goals—often in cooperation with their neighbors.

“We’re seeing an increase in cooperative landscape-scale conservation, where landowners are working with the Department and other agencies to implement wildlife habitat work over hundreds, if not thousands, of contiguous acres,” says Bill White, MDC private land services field chief. “You have a much better chance of success when you reach across the fence and come to an understanding with your neighbor about developing these ‘wild acres’ together with shared resources.”

Many of these cooperatives are united by a common goal, whether it is to manage for more quail, deer, turkey or elk, or to help bring back species on the brink, such as the prairie chicken.

“Landowners working together to improve habitat for quail or turkey also benefit a whole suite of other wildlife species. For example, grassland habitat for prairie chickens also provides much needed habitat for grassland songbirds, rabbits and quail,” White says.

Many other species, in a variety of habitats, also stand to benefit from landscape-scale and watershed conservation partnerships currently being formed throughout the state. These large-scale efforts to improve and conserve functioning habitats ultimately benefit the greatest number of fish and wildlife species possible. Contact your local MDC private land conservationist for information about incentives and cost-share programs, and to schedule a visit to evaluate and enhance wildlife habitat on your property. Find your contact at mdc.mo.gov/node/4755 or call your regional office (see Page 3).

FUTURE CONSERVATION CHALLENGES

When one surveys the state’s abundant populations of small mammals, turkeys and deer, or hears that migratory waterfowl numbers are up, it almost invites a sense of congratulatory complacency because the hard work of restoration appears to be complete. Yet, for every restoration success story, there are other wildlife and fish species still struggling to rebound.

The Department remains dedicated to ensuring that healthy habitats and waterways continue to benefit all plant and animal species. “Challenges to conservation have not disappeared. The next 75 years promise to be more challenging than the last 75 years,” says Draper. “Management of plant and animal diseases, allocation



of water resources and growing human populations that demand much from natural resources are just a few of the challenges we will face.”

Other future challenges include balancing the needs of both abundant and rare wildlife, degradation of our stream systems, habitat loss and fragmentation, and increased urbanization. One of the greatest trials will be managing aggressive, nonnative invasive species of insects, aquatic organisms and plants.

Invasive plants such as garlic mustard, Japanese honeysuckle, Japanese hop, purple loosestrife, sericea lespedeza, spotted knapweed and many others are displacing native plants, causing agricultural damage and reducing the biological diversity of Missouri’s outdoors.

“Successful control depends on prevention, early detection and rapid response,” says Draper. “Invasives can proliferate fairly quickly. Taking precautions to keep invasive plants from spreading is the best way to prevent them from establishing on your property.”

MDC has developed a series of fact sheets to help landowners identify and control several of the most invasive plant species that degrade their pastures and



Bell's vireo

ABOVE: For every restoration success story, there are other wildlife and fish species still struggling to rebound.

LEFT: Spring River at Robert E. Talbot CA near Mt. Vernon. The Department actively manages more than 900 conservation areas and continues to refine the way forest, fish and wildlife management are managed.

choke out native plants that have more nutritional value for domestic animals and wildlife. Download these fact-sheets and learn more about invasive species prevention and control at mdc.mo.gov/node/4086.

Aquatic invasives such as zebra mussels, rusty crayfish, didymo and Asian carp challenge the health of Missouri's waterways. Learn how to prevent their spread at mdc.mo.gov/node/13536.

THE PROMISE CONTINUES

There is a challenge in conserving Missouri's forest, fish and wildlife resources—a challenge that each generation has to choose to accept and ultimately lead. We owe that to those who came before us and, more importantly, to future generations. The Department remains committed to working with Missourians, and for Missourians, to achieve even more forest, fish and wildlife conservation success.

"Today, Missouri is known for world-class outdoor opportunities, and this is not by accident," says Ziehmer. "Citizens in the state of Missouri have a passion for the outdoors like no other state across the nation. They took

it upon themselves—they implemented steps that, today, place us as a national leader. I would encourage citizens to pause as we celebrate 75 years of conservation in the state and just reflect back, to recognize the success of conservation. It's easy to see."

Missouri's natural resources, economic conditions and the needs and desires of its citizens are all changing. Looking forward, the Department will focus on five areas of responsibility:

- Ensure healthy and sustainable forest, fish and wildlife resources throughout the state.
- Manage lands held in public trust and associated infrastructure to ensure continued benefit to citizens and to forest, fish and wildlife resources.
- Provide opportunities for active citizen involvement in programs and services, and conservation education in both rural and urban areas.
- Engage partners at the individual, community, county, state and federal levels to enhance natural resources and effective delivery of conservation services.
- Ensure sound financial accountability and transparency in all areas of operation.

"Our state's conservation success depends on continued citizen support," Ziehmer says. "The Department must cultivate citizen interest, support and trust."



MISSOURIANS CARE ABOUT CONSERVATION

What Missourians Say About Conservation

- 93 percent report they are interested in Missouri's forests, fish and wildlife.
- 73 percent agree that land should be acquired for forests, fish and wildlife conservation.
- Missourians are uniquely outdoor-oriented, with a majority of adults preferring outdoor recreational activities (56 percent) to reading or watching TV (34 percent), or structured sports (9 percent).
- 91 percent agree, "It is important for outdoor places to be protected even if you don't plan to visit the area."
- 79 percent agree that the Conservation Department should help restore animals that once lived, or are currently rare, in the state.
- More than three-quarters agree that the Conservation Department "should assist communities that want to include trees and green spaces in housing, business and shopping developments" (79 percent).
- 82 percent agree that the Conservation Department should help private landowners who want to restore native communities of plants and animals.
- 88 percent approve of hunting for food.

THE FUTURE OF CONSERVATION IS YOU

The future of Missouri's outdoors begins with a question: What do you want the future to look like?

"The future will be what Missourians want it to be—what citizens, landowners and the Department invest in now creates that future," says Conservation Commission Chair Don Bedell. "All you have to do is look back and see the great conservation successes we have created together. Citizen input and participation has and will continue to play an important role in advancing our conservation legacy."

The most significant thing we can do to ensure a bright future for conservation is to provide all Missourians with the opportunity to learn about and understand our natural world. Only then will the next generation be prepared to face tomorrow's conservation challenges. Experience tells us that this effort starts with individuals, spreads to communities, and eventually influences society's decision-making.

"Mentoring is one of the most effective ways to pass on an interest in the outdoors," says Ziehmer. "The Department will continue to emphasize the importance of mentoring through a variety of programs. The Department has also developed educational units so that students can better understand the connections between conserving Missouri's forests, fish and wildlife and the quality of their own lives."

Recruitment, retention and education of hunters and

anglers, as well as other outdoors enthusiasts, are critical for future wildlife management. "We are fortunate in Missouri to have one of the highest hunter and angler recruitment rates in the nation. That is a result of the actions of our citizens and conservation leaders," says MDC Deputy Director Tim Ripperger. "Citizens and the Department have created a state like no other that encourages family participation in outdoor sports and time-honored traditions through dedicated funding, ease to begin hunting at any age, low-priced permits and continual habitat work."

You can help connect other Missourians to the outdoors. Explore volunteer conservation, education and mentoring opportunities at mdc.mo.gov/node/4668, and visit:

Stream Teams: mostreamteam.org

Forestkeepers: forestkeepers.org

Hunter Education: mdc.mo.gov/node/3722

Nature and Interpretive Centers: mdc.mo.gov/node/4439

Discover Nature Schools: mdc.mo.gov/node/9019

The challenges to continuing Missouri's conservation legacy are great, the rewards even greater. Together, Missourians and the Department will continue to build on our conservation inheritance and share our outdoor heritage with new generations. This is the ultimate way to deepen our connection to the land, forests and waterways of the state, and forge a brighter future for the outdoors and for ourselves. ▲

DAVID STONNER

Chronic Wasting Disease in Missouri

Disease management strategies for
our white-tailed deer herd

by JASON SUMNERS



CHRONIC WASTING DISEASE (CWD) was confirmed in free-ranging Missouri deer for the first time last fall. CWD is a fatal disease of the deer family (Cervidae), which includes white-tailed deer, mule deer, black-tailed deer, elk, moose and caribou. It attacks the brain and nervous system of infected animals, causing a loss of body function, abnormal behavior, extreme weight loss, excessive salivation and death.

With the help of hunters, MDC has tested more than 35,000 free-ranging deer for CWD from all parts of the state since 2002, with only five cases detected in Macon County as of June 2012. However, MDC is implementing several disease-management actions to limit the spread, prevalence and impact of the disease. Intervention is important for the health of our deer herd and because white-tailed deer are a valuable part of Missouri's hunting heritage and local economies.

What is CWD?

Chronic Wasting Disease belongs to a group of diseases called transmissible spongiform encephalopathies. It is caused by a misfolded protein called a prion. CWD is a slowly progressing syndrome that takes at least 18 months for clinical signs to appear. Throughout that period, the animals shed infectious prions in saliva, urine and feces into the environment.

The disease can be transmitted directly via animal-to-animal contact through social interaction such as grooming, or indirectly when other deer ingest prions deposited into the environment. This indirect transmission is most likely to occur at human-provided feeding sites and mineral sources, which unnaturally concentrate animals. CWD can spread through the natural movement and dispersal of infected free-ranging deer, the transportation of live captive cervids with CWD, or the transportation and improper disposal of infected carcasses.

CWD was first discovered in 1967 in captive mule deer in Colorado and in free-ranging deer in Colorado in 1981. It has since been found in captive and free-ranging deer and elk in Illinois, Kansas, Maryland, Nebraska, New Mexico, New York, North Dakota, South Dakota, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming, and the Canadian provinces of Alberta and Saskatchewan.

CWD is often confused with hemorrhagic disease. Hemorrhagic disease is a group of virus that includes the epizootic hemorrhagic disease virus and the blue tongue virus. There are some other important differences between hemorrhagic disease and CWD. Unlike hemorrhagic disease there is no known immunity to CWD. All animals that become infected with CWD will eventually die. Additionally, CWD is transmitted directly from individual to individual, whereas hemorrhagic disease is transmitted via a biting midge taking a blood meal from an infected deer and then biting an uninfected deer. Outbreaks stop when frost or cold conditions kill the midges in early fall. This interrupts the cycle of the virus and the outbreak of the disease stops. Once an animal contracts CWD it continues to interact directly or indirectly with other deer until it dies. Therefore, CWD slowly increases in prevalence overtime. Whereas epizootic hemorrhagic disease may quickly have a high infection rate and then go to zero infection rate following a hard frost.

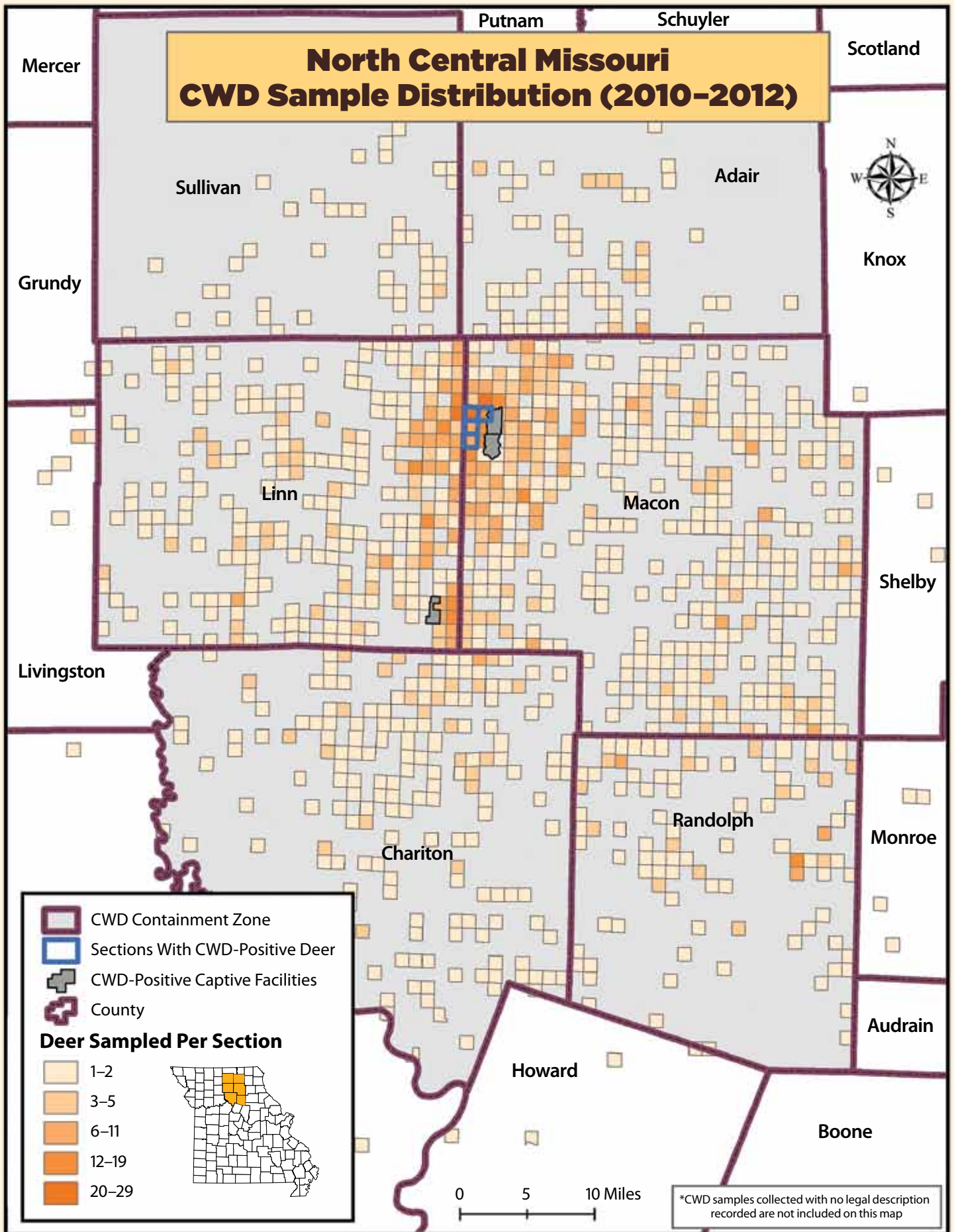
CWD in Missouri

Missouri's first cases of CWD were detected in three captive white-tailed bucks at two private hunting preserves in Linn and Macon counties between February 2010 and December 2011. As of June 2012, eight additional cases of CWD have been found in captive white-tailed deer at the private Macon County facility.

In response to the initial cases, MDC worked with hunters during the 2010 and 2011 firearms deer seasons to collect tissue samples from 2,027 deer harvested in the area. From this sampling, two adult bucks from Macon County tested positive for CWD in the fall of 2011. The two positive test results were the first for free-ranging deer in Missouri and were found within 2 miles of the Macon County hunting preserve.

In March 2012, MDC worked with landowners to sample an additional 657 free-ranging deer from a 163-square-mile area in northeast Linn and northwest Macon counties. The additional sampling identified three more cases of CWD within two miles of the two original cases. The close geographic proximity of all five CWD-positive deer and low prevalence rate (0.4 percent) indicates CWD has been present for a short period of time.

There is no scientific evidence that CWD is transmissible to humans through contact with or the consumption of deer meat.



Lessons Learned in Other States

A lot can be learned from other states' experiences with managing CWD. That information, combined with our own research, is informing our approach in Missouri.

For example, the mule deer herd in north-central Colorado has declined by 45 percent over the past two decades. This decline appears to be due to the high rate of CWD infection in that population (41 percent of adult males and 20 percent of adult females) and the low annual survival rate among the infected deer. The South Converse mule deer herd located in east-central Wyoming has one of the highest known rates of CWD infection (47 percent) of any free-ranging deer population in North America. The increase from 15 percent in 2001 to 47 percent in 2010 coincides with an estimated 56 percent decline in the mule deer population over the past decade.

The CWD outbreak in Wisconsin white-tailed deer appears to be a more recent outbreak than in Colorado and Wyoming, based on the lower rates of infection. However, rates have been increasing annually since 2002, when CWD was first discovered in Wisconsin. Rates within adult male white-tailed deer increased from 8 percent in 2002 to 18 percent in 2011.

Interestingly, Illinois has had a very different experience with CWD. CWD was first discov-

ered in Illinois in 2002, and is present in 10 counties, but rates have remained relatively stable from 2002 through 2011, at about 1 percent. So why aren't rates in Illinois increasing like they are in Colorado, Wyoming and Wisconsin?

To answer that question, we need to understand how CWD is distributed across the landscape and some of the patterns of infection that have been observed. It appears that when the disease is first introduced into a new population, it results in small clusters of CWD-positive individuals. How those individuals interact with the rest of the population, and how far they roam, can affect the rate of infection.

Males vs. Females

CWD rates are higher in adult males than in adult females. However, the distribution and interaction of female social groups greatly influences the distribution of CWD on the landscape.

Adult males tend to have higher rates of infection than adult females because they interact with more potentially infected individuals through breeding activities in the fall. Males interact with other males when establishing dominance and female groups when attempting to breed. So males have a greater potential to acquire and spread the disease. Females typically only interact with a few individuals in their social group,

Adult males tend to have higher rates of infection than adult females because they interact with more potentially infected individuals through breeding activities in the fall.



but they interact more frequently, increasing the chance of transmission between one another. Therefore, a state can have clumps of CWD on the landscape within the female social groups.

Illinois has used this understanding of the distribution of CWD to design a management strategy that removed social groups in very small areas around where CWD-positive deer have been found. The targeted culling of infected deer has the greatest likelihood of interrupting the transmission of disease. By focusing management efforts where CWD-positive deer have been found, they are limiting the number of infected individuals on the landscape and the growth in infection rates within the state. Efforts to reduce deer densities through increased hunter harvest over hundreds of square miles (e.g. across a county or several counties) have not resulted in measurable change in the infection rates of CWD in other states. Therefore, a widespread reduction in deer densities will likely slow the rate of CWD spread, but it won't stop it.

Can People or Livestock Get CWD?

The Missouri Department of Agriculture states there is no evidence from existing research that CWD can spread to domestic livestock, such as sheep or cattle. The Missouri Department of Health and Senior Services states there is no evidence that CWD can infect people.

The Chronic Wasting Disease Alliance recommends the following common-sense precautions when pursuing or handling deer or other cervids that may have been exposed to CWD:

- Do not handle or consume any animal that is acting abnormally or appears to be sick.
- Contact your state game and fish department if you see or harvest an animal that appears sick.
- Wear latex or rubber gloves when field dressing deer or other cervids.
- Bone-out meat from the animal. Don't saw through bone and avoid cutting through brain or spinal cord (backbone).
- Limit handling of brain and spinal tissues.
- Wash hands and instruments thoroughly after field dressing is completed.
- Avoid consuming brain, spinal cord (backbone), eyes, spleen, tonsils and lymph nodes of harvested animals. Normal field dressing coupled with boning-out a carcass will

remove most, if not all, of these body parts. Cutting away all fatty tissue will remove remaining lymph nodes.

- Avoid consuming meat from any animal that tests positive for CWD.

What is MDC Doing to Protect the State Against CWD?

As part of MDC's efforts to manage the prevalence and spread of CWD in Missouri, some regulation changes have been implemented.

Restriction on feeding

Activities such as feeding and placement of minerals/salts that artificially concentrate deer greatly increase the likelihood of disease transmission by concentrating animals at greater than natural densities and increases direct (nose-to-nose) and indirect (contaminated feed and environment) contact among individuals. Feeding and placement of minerals is not necessary to sustain healthy wildlife populations.

The Conservation Commission approved a regulation change in May 2012 that places a restriction on activities that are likely to unnaturally concentrate white-tailed deer and promote the spread of CWD. The ban on the placement of grain, salt products, minerals and other consumable natural or manufactured products is limited to the CWD Containment Zone comprised of Adair, Chariton, Linn, Macon, Randolph and Sullivan counties.

The regulation includes exceptions for backyard feeding of birds and other wildlife within 100 feet of any residence or occupied building, or if feed is placed in such a manner to reasonably exclude access by deer. The regulation also includes exceptions for normal agricultural, forest management, crop and wildlife food production practices. Farmers are encouraged to remove salt and minerals when cattle are not present to minimize use by deer.

Removal of antler-point restriction

The Conservation Commission approved a regulation change in May 2012 for a special harvest provision that rescinds the antler-point restriction (four-point rule) in the CWD Containment Zone composed of Adair, Chariton, Linn, Macon, Randolph and Sullivan counties. The repeal of the antler-point restriction is effective Sept. 15, 2012, the opening of archery season.

Common Clinical Signs of CWD

- » No fear of humans
- » Notable weakness
- » Drooping of head and ears
- » Difficulty swallowing
- » Rough dull coat
- » Loss of coordination
- » Excessive salivation
- » Diminished tone of facial muscles
- » Severe emaciation and dehydration
- » Inability to stand



Cooperation from hunters has been critical in monitoring and detecting CWD.

The reason for the regulation change is that management strategies, such as antler-point restrictions, protect yearling males and promote older bucks. Yearling and adult male deer have been found to exhibit CWD at much higher rates than yearling and adult females, so a reduction in the number of male deer can help limit the spread of CWD. The dispersal of yearling males from their natal or birth range in search of territory and mates is also one of the primary means of expanding the distribution of CWD. The antler-point restriction protects this age class. Therefore, we have removed the antler-point restriction to allow the harvest of yearling males. We are not advocating the removal of large numbers of young bucks, but we are recognizing their role in disease transmission and are removing the antler-point restriction to at least give hunters the opportunity to take these individuals if they so choose.

Suspending permits for new deer breeders and new big-game hunting facilities

In August 2012, the Conservation Commission approved proposed amendments to suspend permits for new big-game hunting facilities and new wildlife breeding facilities in Missouri that hold white-tailed deer or mule deer. The action is part of MDC's efforts to limit the spread of CWD. MDC is soliciting public comments before the proposed changes go into effect. To provide comments, visit mdc.mo.gov/node/18891.

The regulation changes to suspend the issuance of new permits does not apply to wildlife breeders and big-game hunting preserves with existing permits, or to wildlife-breeders or game ranches who wish to hold approved wildlife species other than white-tailed deer or mule deer.

MDC permit records show there are 27 permitted big-game hunting preserves in Missouri with white-tailed deer, and 277 permitted wildlife breeders with white-tailed deer.

Help From Hunters

Cooperation from hunters has been critical in monitoring and ultimately detecting CWD in Missouri. This fall we will continue to monitor the distribution and prevalence of CWD in north-central Missouri. As part of this effort, we are asking hunters to voluntarily submit samples for testing during the archery

and firearms seasons. Detailed information on sample collection locations can be found in the *2012 Fall Deer and Turkey Hunting Regulations and Information* booklet or online at mdc.mo.gov/node/3656.

Don't remove carcasses from the CWD Containment Zone

MDC also encourages hunters who harvest deer within the CWD Containment Zone comprised of Adair, Chariton, Linn, Macon, Randolph, and Sullivan counties not to take whole deer carcasses or carcass parts out of the area where CWD has been found. Exceptions to this include:

- Meat that is cut and wrapped.
- Meat that has been boned out.
- Quarters or other portions of meat with no part of the spinal column or head attached.
- Hides or capes from which all excess tissue has been removed.
- Antlers or antlers attached to skull plates or skulls cleaned of all muscle and brain tissue.
- Upper canine teeth
- Finished taxidermy products

The reason for this recommendation is that CWD can be transmitted from the environment to deer through soil and water that contain infected waste and/or infected carcasses. Deer can be infected with CWD but have no visible signs or symptoms. Moving harvested deer that still have parts known to concentrate CWD (brain, spinal cord, eyes, spleen and lymph nodes) from the area known to have CWD can introduce the disease to other parts of the state.

Hunters should make every attempt to avoid moving the head and spinal cord from the CWD Containment Zone. Disposal of deer carcasses in a landfill is the preferred option. Double bag carcass parts and take them directly to a landfill, or place them in trash cans for pick-up. Burying carcass waste is another acceptable option. Carcass waste should be buried deep enough to prevent scavengers from digging it up.

What Can the Public Do to Help?

People who observe or harvest sickly deer should contact their nearest MDC office or conservation agent (see Page 3). Hunters who harvest deer in the area where CWD has been found are encouraged to participate in MDC's CWD sampling efforts in the area. ▲

Public Comments

MDC continues to work with landowners, deer hunters, members of the captive cervid industry and others on the issue of CWD and welcomes related comments at mdc.mo.gov/node/17901.



75th Anniversary PHOTO CONTEST

Seven photos were selected out of 13,000 in this contest to celebrate Missourians' love of nature and their ongoing role in supporting conservation.

PASSING JUDGMENT IS HARD. That was the consensus of the three judges who sifted through nearly 13,000 images to select the best in each of the seven categories of the 75th Anniversary of Conservation Photo Contest.

"The entries were both impressive in quality and the number of entries was pretty amazing," said contest judge James Fashing. "Missouri is blessed with many excellent photographers, beautiful wildlife and wild places."

Entrants submitted photos in seven categories: Birds, insects and spiders, mammals, reptiles and amphibians, plants and fungi, habitats and landscapes, and outdoor recre-

ation activities. A panel of three judges then selected their favorite image from each category. Those seven images were then posted on the MDC website for the public to vote for the "Best of Show."

"In the end, this contest was not really about awarding great photos," said MDC Art Director and contest judge Cliff White. "Rather, it was about engaging people in the outdoors and conservation. If these photos help inspire folks to get outside, then we have succeeded."

Those seven selected images now appear on these pages, and all of the entries can be seen at flickr.com/groups/mdc75thanniversary.

The Judges

JAMES FASHING is the New Media Editor for the farm cooperative, MFA Incorporated. Prior to that, Fashing worked for 18 years as a photojournalist for MFA's member magazine, *Today's Farmer* where he won numerous industry awards in photography. He has a degree in photojournalism from the University of Missouri-Columbia.

JASON JENKINS has been a photo-journalist for more than a decade. He is currently the managing editor of *Rural Missouri*, a monthly publication published by the Association of Missouri Electric Cooperatives. Jenkins was named "Photographer of the Year" twice by the Cooperative Communicators Association.

CLIFF WHITE has worked for the Missouri Department of Conservation for 16 years. For 10 of those years he was a staff photographer. He currently is the art director and supervises the photography team at the Department. White has a degree in photojournalism from the University of Missouri-Columbia.





Best of Show / Best of Habitats and Landscapes

Howell Island Conservation Area
in St. Charles County, by Ryan
Campbell of Webster Groves

📷 10–20mm lens • f/16 • 1/2 sec • ISO 200

Campbell called this photo a “happy accident.” He had planned to go out to Howell Island with a friend to get shots of the Missouri River. “We were disappointed when we discovered that high water was blocking the access to the island,” said Campbell. “Determined to make something work, we started shooting in an area of driftwood along the eastern back of Centaur Chute, which separates the island from the mainland. As the sun headed closer to the horizon, the sky exploded with all of the color you see in the photo.” Campbell said he started seriously pursuing photography as a hobby about seven years ago.

JAMES FASHING: “The composition of this image was striking. The subtle palate of colors worked well to make one beautiful scenic image. The sky really made this shot.”

JASON JENKINS: “The Missouri River flows for more than 540 miles across the Show-Me State, but it’s often overlooked as a subject by photographers. This image did a terrific job of illustrating the beauty that can be found on the river. The driftwood provided an interesting, textured foreground that leads your eye to the sky with its unusual clouds and reflection on the water.”

CLIFF WHITE: “The dramatic colors and textures are really what caught my eye with this image. Using a wide-angle lens to emphasize the textures and details of the driftwood in the foreground, while still capturing the wonderful colors of the sky, was an excellent technical and compositional choice.”



▲
Best of Insects and Spiders

Tachinid fly by Mark Cillo of St. Louis

📷 100mm macro lens • f/5.6 • 1/80 sec • ISO 400

Cillo photographed this fly while walking the trails at Forest Park in St. Louis. “I found this little fly resting on a blade of grass and was able to get my camera and tripod set up fairly close,” said Cillo. “When shooting macro photography, I usually walk around gardens or fields when the light is good and there is little or no wind, and I look for little critters that might make good subjects.” Cillo is a wedding photographer by trade, and enjoys outdoor and nature photography as a hobby.

JASON JENKINS: “Have you ever looked this closely at a fly? I hadn’t until I saw this image, and I was blown away by the colors and textures. Great use of shallow depth of field to separate the subject from the background. The stem on which the fly rests provides a nice leading line for the eye to follow, and the offset subject takes advantage of the rule of thirds. I may think twice now before grabbing the flyswatter.”





▲ Best of Outdoor Recreation Activities

Fisherman on Lake Taneycomo

by Lee Ann Castile of St. Louis County

📷 135mm lens • f/11 • 1/125 sec • ISO 100

Castile took this picture while on vacation in the Branson area. “I woke early to take pictures of the sunrise on Lake Taneycomo,” said Castile. “The geese were traveling upstream in groups and men were fishing near an old shack. I spent several hours taking pictures of the surroundings. I was inspired by the golden tones on the water from the

morning sun and the mist rising off the lake.” Castile said she is constantly searching for new places to take photos. “I love photographing birds at the Audobon Center at Riverlands, the riverfront area at Clarksville or any lake, river or pond.”

JASON JENKINS: “There were quite a few silhouetted scenes entered, but this was the best of them. Perfect use of the fog and great composition, and it’s clear that the person is fishing. To me, this image has an implied theme of coexistence between people and nature, and that’s what conservation is all about.”



Best of Reptiles and Amphibians

Prairie lizard by Mark Beckemeyer of Steedman

📷 41mm lens • f/4.5 • 1/200 sec • ISO 100

“This picture was taken shortly after the noon hour as the prairie lizard was descending a tree near the frog pond in our backyard,” said Beckemeyer. “It took many tries to get close enough and acquire the desired effect. The studio-like quality was achieved by shooting the lizard on a shaded

tree trunk, with a sunlit tree line 15 feet behind for a backdrop.” Beckemeyer said while he takes photos in a variety of locations, he takes most of them either at his own property or at Reform Conservation Area, which is near his home.

JAMES FASHING: “The simple background really makes the lizard and its markings stand out in this shot. The focus on the eye was tack sharp. Shooting at eye level or lower often has more striking results than standing above your subject.”



Best of Birds

Short-eared owl by Jason G. Harrison of Troy

📷 600mm lens + 1.4 teleconverter • f/6.3 • 1/1600 sec • ISO 800

Harrison photographed this owl in Clinton County. “A dear friend and fellow photographer lives near this farm and told me about the owls,” said Harrison. Harrison said he drove four hours through the tail end of a major snowstorm to arrive late afternoon. “The storm had just passed and the sun had come out,” said Harrison. “The owls were already actively hunting and I came upon a large group of them.” Harrison said he continued photographing the owls over the next several days. “Some snow drifts I walked through were over waist deep, which made for a very difficult hike to where the owls were located. It paid off, though, as I was able to photograph several different owls. Those days are memories I will never forget, and may never experience again.”

CLIFF WHITE: “It was very difficult to pick the single best image in all of the categories, but the birds category was perhaps the toughest. The judges spent a lot of time discussing this category, but we kept coming back to this owl picture. The light is fantastic, the composition is very well done, and it’s just a cool subject.”





▲
Best of Plants and Fungi

Dogwood blossom by Bob Korpella of Aurora

📷 100mm macro lens • f/5.0 • 1/100 sec • ISO 100

Korpella took this picture while hiking on private land in Barry County. “The dogwoods were almost spent, but the ones still in bloom had huge blossoms. I was intrigued by the center. It looked like a party was going on in there, so I decided to focus my attention on that portion of the blossom” said Korpella. A Missouri Master Naturalist and Stream Team member, Korpella

said one of his favorite activities is heading outside with his camera. He said he photographs in a variety of locations in both Missouri and Arkansas. “But,” he said, “it’s amazing what you can discover in your own backyard.”

CLIFF WHITE: “In a category that had so many wonderful images of beautiful flowers, the ones that stood out were those that approached the subject matter in a new and unexpected way. I love macro photography, because it takes small details and makes them larger than life. This image expertly blends this larger-than-life quality, with great composition, color and delicate textures.”





Best of Mammals

Black bear by Matt Miles
of Webster County

📷 600mm lens • f/4 • 1/80 sec • ISO 1250

Miles photographed this “Ozark Bruin” in Webster County. “This spring, I quietly walked in predawn darkness to a forested ridge where I had successfully photographed gobblers a couple of days earlier. During this morning, no turkeys responded to my calls, but, to my amazement, this magnificent bear slowly made his way in my direction.” Miles said that while much of his photography is taken on his rural property, he has a job that requires him to travel around the state, giving him ample opportunity to pursue photography in a variety of locations.

JAMES FASHING: “There were many great mammal entries, and many of them look like portraits, where the animals are looking directly at the photographer. This action shot was unique. The photographer reacted quickly with perfect focus control in low light.”

Hunting and Fishing Calendar

FISHING

	OPEN	CLOSE
Black Bass from Ozark streams	5/26/12	2/28/13
Bullfrogs and Green Frogs	Sunset	Midnight
	6/30/12	10/31/12
Nongame Fish Gigging	9/15/2012	1/31/2013
Trout Parks	3/01/12	10/31/12

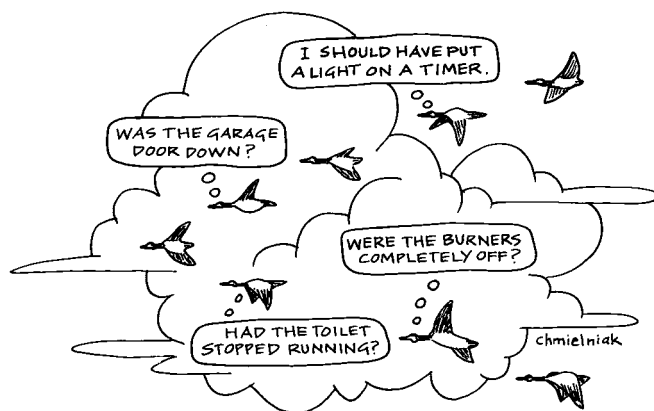
HUNTING

	OPEN	CLOSE
Coyote	5/07/12	3/31/13
Deer		
Archery	9/15/12	11/09/12
	11/21/12	1/15/13
Firearms		
Urban Zones	10/05/12	10/08/12
Early Youth	11/03/12	11/04/12
November	11/10/12	11/20/12
Antlerless	11/21/12	12/02/12
Alternative Methods	12/15/12	12/25/12
Late Youth	12/29/12	12/30/12
Dove	9/01/12	11/09/12
Furbearers	11/15/12	1/31/13
Groundhog	5/09/12	12/15/12
Pheasant		
Youth (North Zone Only)	10/27/12	10/28/12
North Zone	11/01/12	1/15/13
Southeast Zone	12/01/12	12/12/12
Quail	11/01/12	1/15/13
Youth	10/27/12	10/28/12
Rabbit	10/01/12	2/15/13
Rails (Sora and Virginia)	9/01/12	11/09/12
Squirrel	5/26/12	2/15/13
Turkey		
Archery	9/15/12	11/09/12
	11/21/12	1/15/13
Firearms	10/1/12	10/31/12
Waterfowl	please see the <i>Waterfowl Hunting Digest</i> or see mdc.mo.gov/node/3830	
Wilson's (common) Snipe	9/01/12	12/16/12
Woodcock	10/15/12	11/28/12

TRAPPING

	OPEN	CLOSE
Beaver and Nutria	11/15/12	3/31/13
Furbearers	11/15/12	1/31/13
Otters and Muskrats	11/15/12	2/20/13

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* or the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, the *Fall Deer and Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest* and the *Migratory Bird Hunting Digest*. For more information visit mdc.mo.gov/node/130 or permit vendors.



Migration anxiety

Contributors



BRETT DUFUR, an MDC editor, is writing a history of the Department for its 75th anniversary. He has authored numerous books on Missouri's outdoors including the Katy Trail, wine country and the Lewis and Clark Trail. He lives in Rocheport with his family and loves to paddle the Missouri River and explore wild places.

JASON SUMNERS is a deer biologist for MDC and oversees the state's deer management program. Jason resides in Columbia with his wife. Whether he's hiking in the mountains, chasing whitetails or crappie fishing, Jason enjoys spending time in the great outdoors with family and friends.



Operation Game Thief

Help put game thieves out of business. If you see a possible violation in progress, call your county conservation agent immediately or dial the toll-free number below:

1-800-392-1111

All information is kept in strict confidence. Desirable information includes names of violators, vehicle description and license number, as well as the violation location.

Join us on Facebook

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Facebook is another great way to get information about nature and outdoor recreation in Missouri.

AGENT NOTES

Help Protect Our Wildlife Resources.

OUR STATE CONSTITUTION charges the Conservation Department with “The control, management, restoration, conservation and regulation of the bird, fish, game, forestry and all wildlife resources of the state.” Conservation agents do their job through a combination of enforcing *Wildlife Code* regulations and educating the public about the importance of following those regulations. It is a daunting task for a conservation agent to effectively cover an entire county. Fortunately, we do not have to do it alone. We rely on help from the citizens of Missouri.

Hunting and fishing are activities that come with a great deal of responsibility. One of those responsibilities is to follow the rules that govern those outdoor pursuits. We encourage outdoors enthusiasts to not only follow the rules, but also to not tolerate others who break the law.

Conservation agents, no matter how many hours they work, are rarely in the right place at the right time to catch many of the *Wildlife Code* violators. Our best cases almost always start with a phone call from a concerned citizen. The public is the best tool that an agent has to stay informed. It takes all of us working together to have a positive impact on Missouri’s wildlife resources. Please get involved. Call your local conservation agent or the Operation Game Thief Hotline (1-800-392-1111), if you observe a violation.



Jeff Scott is the conservation agent for Bollinger County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.

Elk Update

Early information from a study of Missouri’s growing elk herd shows that the big animals are adapting to their new home in the eastern Ozarks.

Every elk brought to Missouri from Kentucky is fitted with a GPS collar. When possible, calves born here also are fitted with collars that periodically transmit their location to a database. The information reveals what habitats the elk use at different times of day and in different seasons. The ultimate goals are to learn how to help elk prosper, minimize the potential for conflict with people, and help determine when carefully regulated hunting is appropriate to keep the elk herd within the carrying capacity of the 221,000-acre Elk Restoration Zone.

The GPS collars have captured more than 55,000 locations for elk since 2011. Locations are clustered around small home ranges near release sites. Food plots and other open areas in the restoration zone are most attractive to the elk.

In the summer, when food normally is most plentiful, cows typically spend about half of their time in areas of less than a square mile. Bull elks have slightly larger home ranges than cows, and both range more widely in the winter.

The elk sometimes are seen around low-traffic gravel roads at Peck Ranch Conservation Area (CA) but avoid paved roads. Elk moved only short distances to avoid deer hunters in the fall and returned to their accustomed haunts when hunters left. Examination of elk droppings showed average

diet quality and moderate levels of stress hormones except for a brief period during the managed youth deer hunt at Peck Ranch CA.

Only a tiny fraction of the recorded locations were outside the designated restoration zone. Most of those were on land owned by the U.S. Forest Service or other groups that welcome the elk.

Like other wildlife, Missouri’s elk suffered some setbacks during the summer’s extreme heat and drought. Several elk that arrived in Missouri this year or were born to this year’s elk cohort died in July. The group of elk brought to Missouri in 2011 is doing fine in spite of drought and heat. As of mid-August, more than 70 elk still were in the restoration zone.

MDC, the Missouri Department of Agriculture and the University of Missouri Veterinary Services are working to learn why the elk died. Stress from relocation, extreme heat and drought appear to be contributing factors.

Autumn is an excellent time to try to catch a glimpse of elk at Peck Ranch CA. Some of the area’s gravel roads are accessible only to vehicles with high ground clearance and may be impassable after heavy rainfall. If you are lucky enough to see elk, take care not to disturb them. The *Wildlife Code of Missouri* prohibits disturbing, pursuing or enticing elk.

Directions to Peck Ranch CA and area maps are available through the Conservation Area Atlas database at mdc.mo.gov/node/15985. Area maps and additional elk information are also available at the Peck Ranch CA office.



Subscribe online • mdc.mo.gov/node/9087 • Free to Missouri households



I Am Conservation

"We are all very excited to have the elk back in Missouri, because it gives us the opportunity to explore wildlife on a new level," says April Hayes (center), who, along with her husband, Derrick Hayes (left), their children, Cyrus, 8, and Prestyn, 4, and April Hayes' sister, Michelle Backman (right) and her son, Harper, 6 months, recently went on an elk viewing trip to Peck Ranch Conservation Area. "The kids really enjoy driving down to Peck Ranch and participating in the adventure of trying to see the elk and hearing them bugle in the distance. Growing up in the Ozarks and Shannon County was a pleasure. As kids, we were able to appreciate the wonders of the outdoors and all it has to offer. Whether it was going to the river, hunting, fishing or just being outside, we always had fun and respected the area we lived in. Now that we have our own children, we are able to pass along that appreciation to them and continue that tradition of exploring the land and nature around us." —*Photo by David Stonner*